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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

CLEVELAND, MICHAEL B

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 05/12/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/782,072	LIOU ET AL. <i>B</i>
	Examiner Michael Cleveland	Art Unit 1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 10 February 2003.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-10 is/are pending in the application.

4a) Of the above claim(s) 6-8 is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-5, 9 and 10 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____	6) <input type="checkbox"/> Other: _____

DETAILED ACTION

In response to applicant's telephone inquiry regarding the last Office action, the following corrective action is taken. This Office Action replaces the action mailed 4/10/2003 (Paper No. 11). The body of that action stated that the rejection was final, but the cover sheet stated that the action was non-final. The action is final.

The period for reply of 3 MONTHS set in said Office Action is restarted to begin with the mailing date of this letter. Two references, an accompanying PTO-892, and a copy of an initialed IDS (Paper No. 8) were sent with the prior office action. New copies have not been included with this communication.

Election/Restrictions

1. This application contains claims 6-8 drawn to an invention nonelected with traverse in Paper No. 6. A complete reply to the final rejection must include cancelation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-5 and 9-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "high" in claims 1-5 and 9-10 is a relative term which render the claims indefinite. The terms are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. For purposes of applying art, the term "high" has been treated as inclusive of any amount of aluminum oxide.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fefferman (U.S. Patent 3,653,946, hereafter '946) in view of Fitch (U.S. Patent 2,984,575, hereafter '575) and Kurschner et al. (U.S. Patent 5,795,841, hereafter '841).

Claims 1 and 4: '946 teaches a method of gilding a ceramic substrate, such as alumina (col. 4, lines 33-35), which comprises:

preparing a coating material which contains gold (col. 2, lines 58-75);
cleansing the substrate (col. 3, lines 13-16), which may be alumina (col. 4, lines 33-35);
brushing (i.e., smearing) the prepared coating material on the substrate to form a film thereon (col. 3, lines 18-22);

drying the substrate (col. 3, lines 22-24). This drying step necessarily has a finite length and therefore may be divided into a first half (i.e., a first drying step) and a second half (i.e., a second drying step);

baking the substrate at a temperature of 427-1054 °C to form a gold film (col. 3, lines 30-col. 4, line 15);

and cooling the substrate to room temperature (col. 3, lines 69-75).

'946 does not explicitly teach A) a tubular substrate, B) inspection of the substrate to see if the film is free of defects, C) the particularly claimed baking time and temperature, and D) retrieval of the tube after the temperature in the stove is below 110 °C.

A) '946 does not teach that the substrate is tubular. However, '575 teaches that decorative gold coatings may be provided for tubular ceramic substrates. See, for example, col. 12, lines 5-21, which demonstrate tubular substrates including a tumbler, a bottle, and a tube. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the method of '946 on a tubular ceramic substrate to have provided a

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decorative coating for the substrate because '946 teaches a method of applying adherent gold coatings on ceramic substrates and '575 teaches that decorative gold coatings are desired on tubular ceramic substrates.

B) '946 does not explicitly teach inspection of the substrate to see if the film is uniform and free of defects. However, it is extremely well known to inspect a completed product to determine if it is satisfactory. For instance, '575 teaches that after the gold films are formed, they are observed, and the quality of the film is judged (col. 12, lines 1-22). In addition, '946 teaches that defects, such as bubbles and blisters, are undesirable. Taking the references as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have inspected the films to judge the quality (i.e., uniformity) and to have evaluated whether such defects existed in order to have determined if the products would have been suitable.

C) '946 does not specifically teach baking at 780-880 °C. However, the disclosed baking range (427-1054 °C, discussed above) overlaps the claimed range. The baking times of '946 are less than the claimed times. However, '946 discloses that an adherent gold coating is desired (Title) and indicates that further baking may strengthen the bond of gold to the substrate (col. 4, lines 3-15). However, '841 teaches that the adhesion of metals, such as gold (col. 1, lines 10-19 and col. 2, lines 1-4), to ceramic substrates, such as alumina or quartz (col. 1, lines 50-65) may be improved by heating at 200-1000 °C for 0.5 to 24 hours. The heat treatment temperatures and times overlap the claimed ranges. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected a temperature and time form within the claimed ranges because '841 discloses that they are operative for increasing the adhesion of metals to ceramics. The subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a *prima facie* case of obviousness, see *In re Malagari*, 182 U.S.P.Q. 549.

D) '946 does not explicitly state that the substrate is removed from the stove after the temperature has been reduced to room temperature. However, it does teach that the cooling of the substrate should be controlled in order to reduce stress (col. 3, lines 69-72). The Examples indicate that this may be done by leaving the substrate in the furnace (i.e., stove) until a certain

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temperature is reached (col. 4, lines 46-51; col. 5, lines 1-12). The substrate may be removed at approximately 200 °C. The teaching at col. 5, lines 10-12 makes it appear that the substrate may also be left in the oven until it reaches room temperature.

6. Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fefferman '946 in view of Fitch '575 and Kurschner '841 as applied to claim 1 above, and further in view of Chow et al. (U.S. Patent 5,759,230, hereafter '230).

'946, '575, and '841 are discussed above, but teach the use of gold resinate rather than gold chloride as a precursor for the gold film. However, '230 teaches that metal films may be made from metal precursor solutions including those of metal chlorides (col. 1, lines 6-8; col. 2, line 57-col. 3, line 10). Gold (III) chloride ($AuCl_3$) is specifically disclosed as an operative precursor in Table I. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used gold (III) chloride as the gold precursor in place of the gold resinate of '946 with the expectation of similar results because '230 teaches that it is also able to be decomposed to form a gold film.

The references do not explicitly teach that the concentration of the precursor is 10-11%. However, '841 suggests a precursor concentration of 0.01-2% (col. 2, lines 46-48), '575 appears to teach the use of about 10 weight % of the gold precursor (Examples IX and X), '946 teaches the use of about 20% of the gold precursor (col. 4, lines 22-62), and '230 teaches the use of about 0.3-6 % of the gold precursor (Table I; the examiner assumed that the solution density was approximately that of the solvent, ethylene glycol: 9.31 lb./gal.). Taken collectively, the references suggest precursor concentrations of 0.01-20%. The subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a *prima facie* case of obviousness, see *In re Malagari*, 182 U.S.P.Q. 549.

Claim 3: '946 and '575 do not explicitly state that the substrate is kept at room temperature for 30 minutes after the coating material is smeared on. However, normally objects such as tumblers and glasses are kept at room temperature between uses, and it is frequently more than 30 minutes between uses of a tumbler. Therefore, it would have been obvious to one

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of ordinary skill in the art at the time the invention was made to have kept a substrate, such as a tumbler, at room temperature for at least 30 minutes after the film was formed (and therefore after the coating material was smeared on) as part of the normal use of a tumbler.

Claim 4: 12 hours is within the time range disclosed by '841, as discussed above.

Claim 5: '946 does not explicitly teach removing the substrate at less than 100 °C and cooling it at room temperature. However, the examples teach removing the substrate at about 200 °C (col. 4, lines 46-50; col. 5, lines 4-6) or room temperature (col. 5, lines 10-12), thereby teaching an effective range of room temperature to 200 °C. The subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range (just above room temperature to 100 °C) disclosed by the reference because overlapping ranges have been held to be a *prima facie* case of obviousness, see *In re Malagari*, 182 U.S.P.Q. 549.

7. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wainright (U.S. Patent 5,052,382, hereafter '382) in view of Fefferman (U.S. Patent 3,653,946, hereafter '946) in view of Fitch (U.S. Patent 2,984,575, hereafter '575) and Kurschner et al. (U.S. Patent 5,795,841, hereafter '841).

'382 teaches a gold-coated silica tube for use as an electrode in an ozone generator (col. 3, lines 11-53), but does not teach a method of making the electrode. Therefore, one of ordinary skill in the art would have been motivated to have looked to the related art for methods of forming gold on ceramics such as silica.

'946, '575, and '841 teach such a method, as discussed above. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the method of '946, '575, and '841 as the particular method of forming the electrode of '382 with a reasonable expectation of success because '946, '575, and '841 teach operative methods of depositing gold on ceramics.

Response to Arguments

8. Applicant's arguments filed 2/10/2003 have been fully considered but they are not persuasive.

Applicant's comments regarding the "drying" limitations are noted. The limitations are considered to be clear under 35 USC 112, 2nd paragraph. However, the claims are not considered to be commensurate in scope with Applicant's remarks regarding the specification at p. 4, lines 19-25 that appear to suggest that the steps are performed in the particular order of cleaning, first drying, coating, and second drying because no such time relation is explicitly or implicitly required in the claims. Applicant is further informed that such a requirement by itself would not render the claims patentable because it is well known to dry substrates between cleaning and coating steps. For example, Leinkram et al. (U.S. 3,607,379), col. 1, line 73-col. 2, line 15, may be cited as demonstrating drying a substrate between steps of cleaning and applying a metal.

Applicant's comments regarding the term "high" are unconvincing because they do not provide any basis for determining the amount of aluminum oxide. Applicant's argument that the term means "a material having properties similar to the properties of a quartz tube" are unconvincing because the definition is indefinite for the same reasons as the phrase "or the like" (See MPEP 2173.05(d)) and further because quartz does not contain any aluminum oxide. Applicant's statement that Applicant is permitted to be his own lexicographer is noted. However, Applicant has not offered any definition for "high" that is supported by the specification as required by 35 USC 112, 1st paragraph and sufficiently clear to meet the standards of 35 USC 112, 2nd paragraph.

Applicant's amendment resolves the issues under 35 USC 112, 2nd paragraph regarding "uniformly", "free of defects" and the "smearing" clause.

Applicant's arguments regarding the criticality of the temperature ranges are unconvincing because they are not commensurate in scope with the claims and particularly not commesurate with the claims that do not specify the use as an ozone generator. The arguments within the body of the response are unconvincing because they are unsupported by evidence.

The arguments in the affidavit are also mere assertions that are unsupported by evidence. Further, Applicant's arguments in paragraphs III and IV state that temperatures outside the claimed range may lead to inferior results (emphasis added by examiner). There is no showing of the conditions which lead to the inferior results. Applicant's arguments in paragraph IV also do not represent a comparison with the closest prior art, which demonstrates retrieving the articles at 200 °C and room temperature. Finally, there is no statement that the difference is

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results would have been unexpected by one of ordinary skill in the art. If Applicant submits evidence demonstrating the criticality of the claimed baking range, the claims must be commensurate in scope with the showing of evidence.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Cleveland whose telephone number is (703) 308-2331. The examiner can normally be reached on 9-5:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 306-3186 for regular communications and (703) 306-3186 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



MBC
May 5, 2003



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